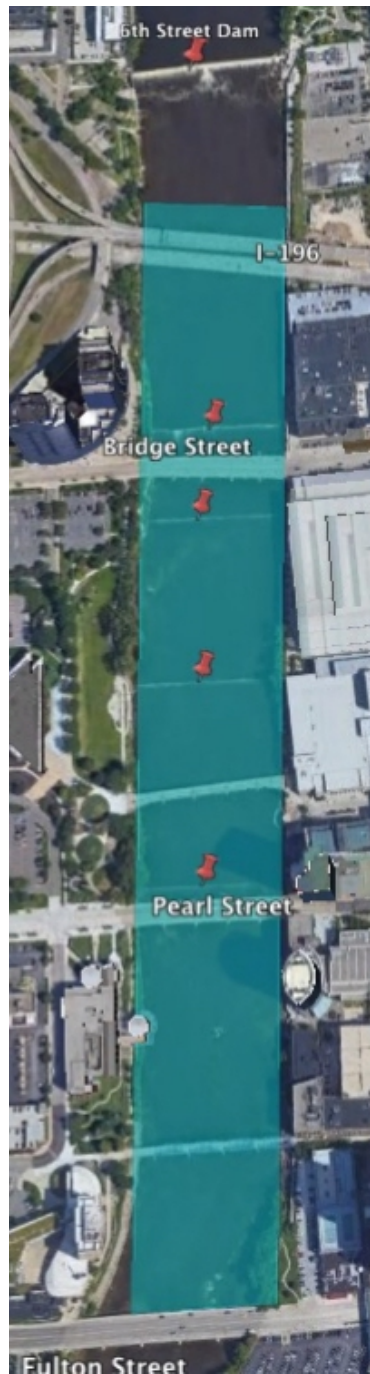


## Grand River Restoration: RCPP Project Overview



*RCPP Project Construction Area*

**Background:**

In 2011, the City of Grand Rapids embarked on a journey to re-envision the city's relationship with its namesake river and, in so doing, transform not only the cityscape itself but also the health of the river in the downtown corridor. The project, often referred to as "Restore the Rapids," seeks to revitalize, enhance, and maintain the rapids in downtown Grand Rapids, which is expected to facilitate incidental benefits such as restoring the ecological, cultural, and recreational functions of the historic rapids. Restoring the river brings a wide diversity of benefits to the city and region. The project will include water quality and habitat enhancements, vastly improved access and recreational opportunities for residents and visitors, and enhanced aesthetics and riparian functions that will attract people to a re-vitalized downtown.

## **The Project**

**Project Description: Beautification Dam Removal and Habitat Restoration**

On November 29, 2016, the Grand Valley Metropolitan Council was awarded \$8 million in funding for the "**Lower Grand River Watershed Habitat Restoration – Farmland Conservation Project**" through the United States Department of Agriculture's Regional Conservation Partnership Program (RCPP).

Approximately \$4.1 Million supports the instream habitat restoration as part of the Grand River Restoration project. This project will utilize a combination of PL 83-566 funds as well as private dollars to restore some of the most degraded habitat within the urban reach of the river.

**RCPP Project Boundaries:**

As shown in Figure 1.0, below, the project area is from 500 feet downstream of the 6<sup>th</sup> Street dam to Fulton Street. This represents an area of approximately 36 acres of restored complexity and rapid habitat similar to that found in other healthy Michigan rivers and streams.

**RCPP Construction Activities:**

The key outcomes of this project, as shown in Figures 1.1-1.5, include removing four low-head beautification dams; restructuring the river channel through excavation, grading, and importing of boulders, cobble, and gravel substrate; installing additional scour protection on existing bridge structures; installing five recreational features; and installing and improving shoreline access. The restructuring of the channel will create diverse sequences of runs, riffles, pools, glides, drops, and eddies.

Removal of the four low-head dams is expected to improve upstream passage for non-jumping native fish species like lake sturgeon, walleye, small mouth bass, and other benthic species. The existing uniform channel will be replaced with at least 13 riffle habitat features with associated run, pool, glide habitats. Safety, fishing access, user circulation, and aquatic habitat complexity for fish and mussels were specifically considered in all iterations of the river design for this reach.

The addition of more riffle features made of cobble and boulders help to distribute an 18-foot gradient over this reach of river. To maintain depth at lower flow rates, and to maintain naturalized rapid functionality and aesthetics, some larger boulders have been incorporated into the design of the gently sloped riffle areas. Diversity of flow direction has also been incorporated into the design to further naturalize the function and aesthetic of the project reach. A combination of diverse riffle features has been designed into the project to have a maximum head loss of 18 inches and a maximum bed slope of 2.5%. These features have variations in grade and substrate and glide from upstream pools to the riffle crest. The riffle features will create diverse flow depths and incorporate rolling waves or swift current with adjacent eddies.

Wave features, which will provide additional recreational opportunities in the Grand River, have been designed with a maximum head loss of 18 inches and will have a minimum width of 30 feet. The tailwater elevations of these features have been designed to be above the invert elevation and there will be standing waves with adjacent eddies to provide safety for recreational users and additional habitat areas.

One boulder garden feature has been designed near Fulton Street Bridge. The boulder garden will replicate the historic boulder rapid likely to have been present in this reach of the river. The boulder garden will have a minimum boulder spacing of 3 feet and will provide an unsorted placement of boulders and cobble of varying size. The boulder garden will create numerous refuge areas for fish and adds high complexity, pockets of eddies and back eddies that will benefit a variety of fish species.

#### **Construction Sequencing:**

The RCPP Project construction activities will occur within six isolated areas. Prior to the start of construction, RCPP partners will meet frequently to develop, implement, and review a public engagement strategy. Grand Valley Metropolitan Council has hired ECT to develop a Watershed Project Plan. Once the required permits are in place, construction of isolation areas can begin. With isolation areas in place, salvaging unionids and fish from downstream construction areas, as necessary, would begin.

Physical removal of the low-head dams and construction of the downstream grade control structures, boulder garden, scour protection, and habitat improvements would then begin in this reach and be constructed in four phases with Bridge Street to Pearl Street West side isolation area being constructed first. Additional ongoing RCPP related activities during project construction will include a stormwater pollution prevention plan and care of water, landscaping of native plants and site suitable habitat vegetative improvements, baseline monitoring, and post-project evaluation of river conditions.

This project is ready to proceed. The RCPP funding is committed. The RCPP funding must be fully spent by June 2022, which puts this project on an accelerated timeline to receive permits and begin construction. The only remaining hurdle is environmental permitting and review.

## Other Projects

The City of Grand Rapids is considering a number of other projects along the Grand River. For example, the City and its project partner Grand Rapids Whitewater are exploring a project that would consist of constructing an Adjustable Hydraulic Structure (AHS) and removing the aging 6<sup>th</sup> Street dam. These projects are contingent on approvals and funding that are beyond the control of the City and its project partners.

Removing the 6<sup>th</sup> Street dam would yield public safety, habitat, and recreational benefits. But it risks exposing upstream reaches of the Grand River to sea lamprey escapement. Accordingly, the AHS must be constructed before removing the 6<sup>th</sup> Street dam to deny sea lampreys access to more than 1,900 miles of new stream habitat, which would otherwise cost the Great Lakes Fishery Commission up to \$1.8 million annually to treat with lampricides.

Once completed, the AHS will replace the 6<sup>th</sup> Street Dam as the primary sea lamprey barrier on the river. The AHS will represent a state-of-the-art structure, engineered to meet public safety/flood control, sea lamprey control, fish passage, and recreational access and use objectives. The AHS combines inflatable crest and velocity barrier technology to block the upstream migration of invasive species. The structure is the result of large-scale collaboration among the Great Lakes Fishery Commission, the U.S. Army Corps of Engineers, Obermeyer Hydro Inc., the City of Grand Rapids, and many others.

Construction of the AHS is anticipated to take two construction seasons with half of the construction area dewatered at a time while the structure is built. A map of the AHS construction footprint and approximate location is included in Figure 2.0.

Once the AHS has been constructed and is functioning as an active barrier against sea lamprey, removal of the 6<sup>th</sup> Street Dam can begin along with the remaining work downstream to the RCPP Project boundary. This work includes physically removing the 6<sup>th</sup> Street dam and replacing it with a variety of grade control structures, habitat and recreation structures like those installed during construction of the RCPP Project.

Relative to the RCPP Project, the AHS project would be funded independently, and funding has not yet been fully secured for the AHS project. It is currently anticipated that the Great Lakes Fishery Commission will likely contract with the U.S. Army Corps of Engineers to build the AHS, but that process is still underway. We believe that the AHS will ultimately be constructed, but it obviously will not be until funding and a construction contractor are secured.

In addition, the purposes and benefits of the RCPP Project and the construction of the AHS and removal of the 6<sup>th</sup> Street dam are separate and distinct. The RCPP Project will restore the rapids to a segment of the Grand River that has been fully excavated in the past and is expected to facilitate myriad habitat and recreational benefits as a result. The AHS construction and 6<sup>th</sup>

Street dam removal, on the other hand, are focused primarily on preventing invasion of sea lamprey to 1,900 river miles to reduce reliance on lampricide, and to reveal the historic rapids .

Beyond that, practical logistics demonstrate the independence of the RCPP Project and other projects that may occur along or within the Grand River, including construction of the AHS and removal of the 6<sup>th</sup> Street dam. The City and Grand Rapids Whitewater are committed to the RCPP Project regardless of whether the AHS is ever constructed. This is because the benefits of the RCPP Project are not contingent on the AHS being in place or the 6<sup>th</sup> Street dam being removed. The same is true of the RCPP Project's funding. And while the AHS construction and removal of the 6<sup>th</sup> Street dam may provide ancillary benefits to the RCPP Project by way of improved and more controllable flow of the river, the RCPP Project can—and will—proceed regardless of whether the AHS is built. The AHS is no different. Assuming funding and permits were secured for the AHS first, we could—and would—implement the AHS project even if the RCPP Project were never undertaken.

Even assuming the 6th Street dam remains in place, the RCPP Project will improve habitat for several species and provide new recreational opportunities to residents. The AHS, meanwhile, is also logically freestanding. It will provide public safety benefits, more effective control of sea lampreys in the Grand River and its tributaries, fish passage benefits, and recreational opportunities. Put simply, each project is logical on its own, and completion of the RCPP does not risk a “domino effect” that renders the AHS project inevitable.

## RCPP Project Figures

Figure 1.0: RCPP Project Construction Area

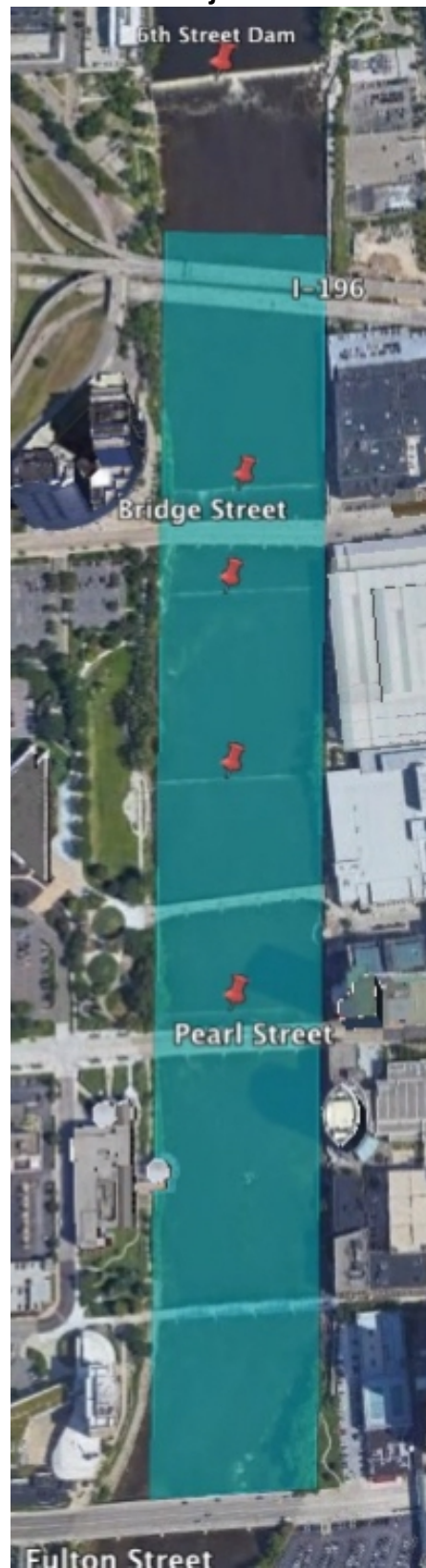


Figure 1.1: I196-Bridge Street Design

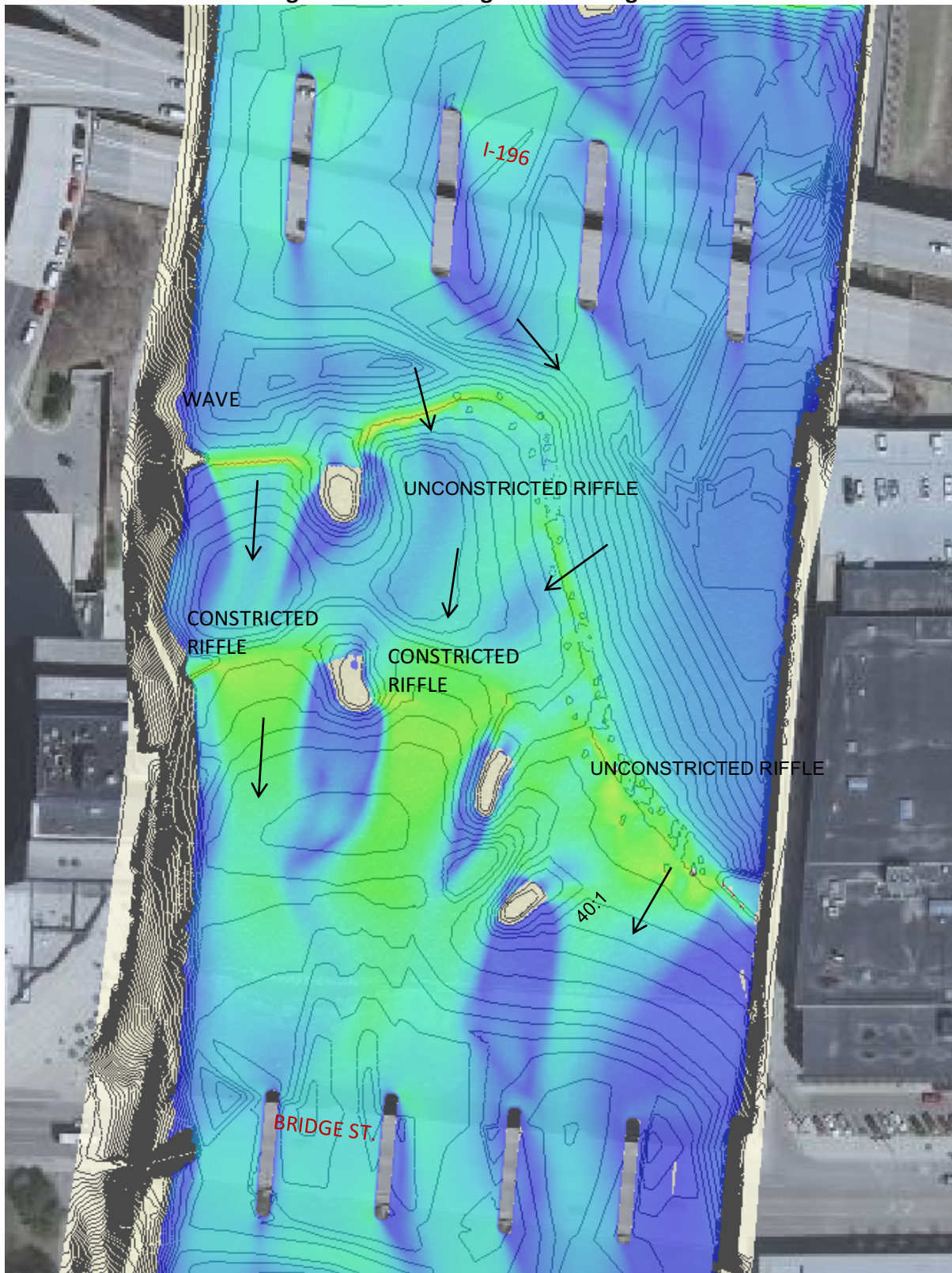




Figure 1.2: Bridge Street to Gillett Bridge Design

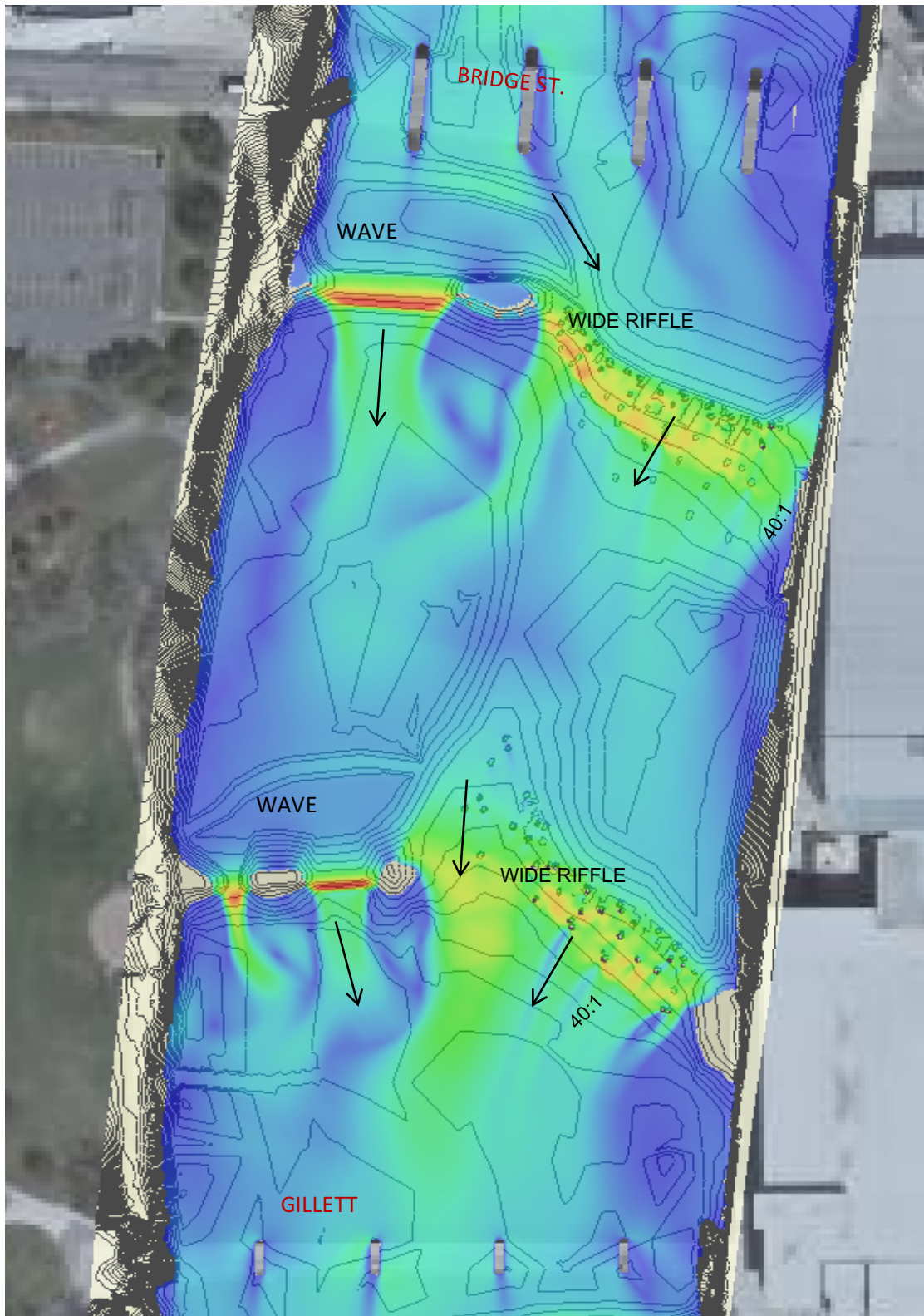




Figure 1.3: Gillett Bridge to Pearl Street Design

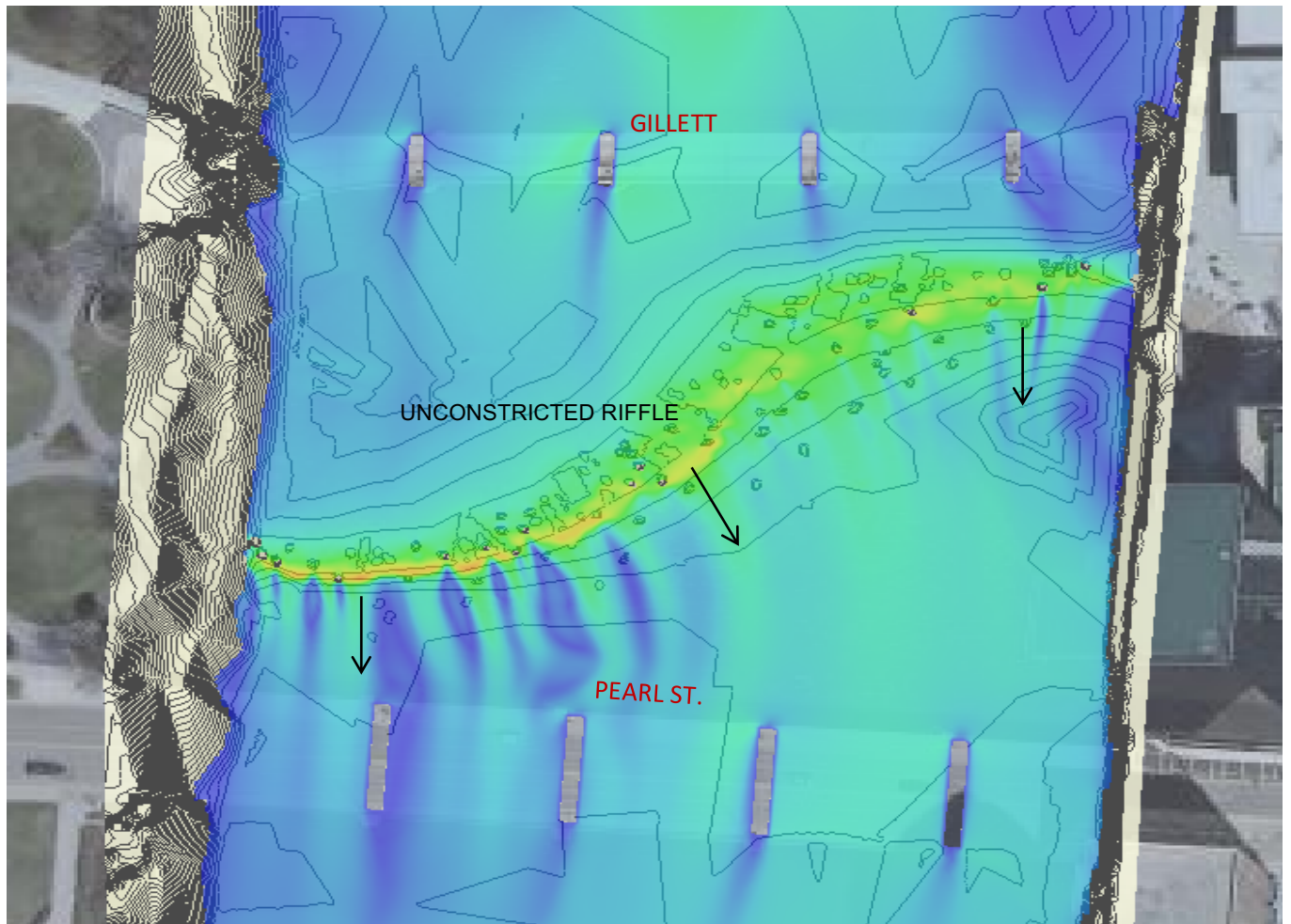


Figure 1.4: Pearl Street to Blue Bridge Design

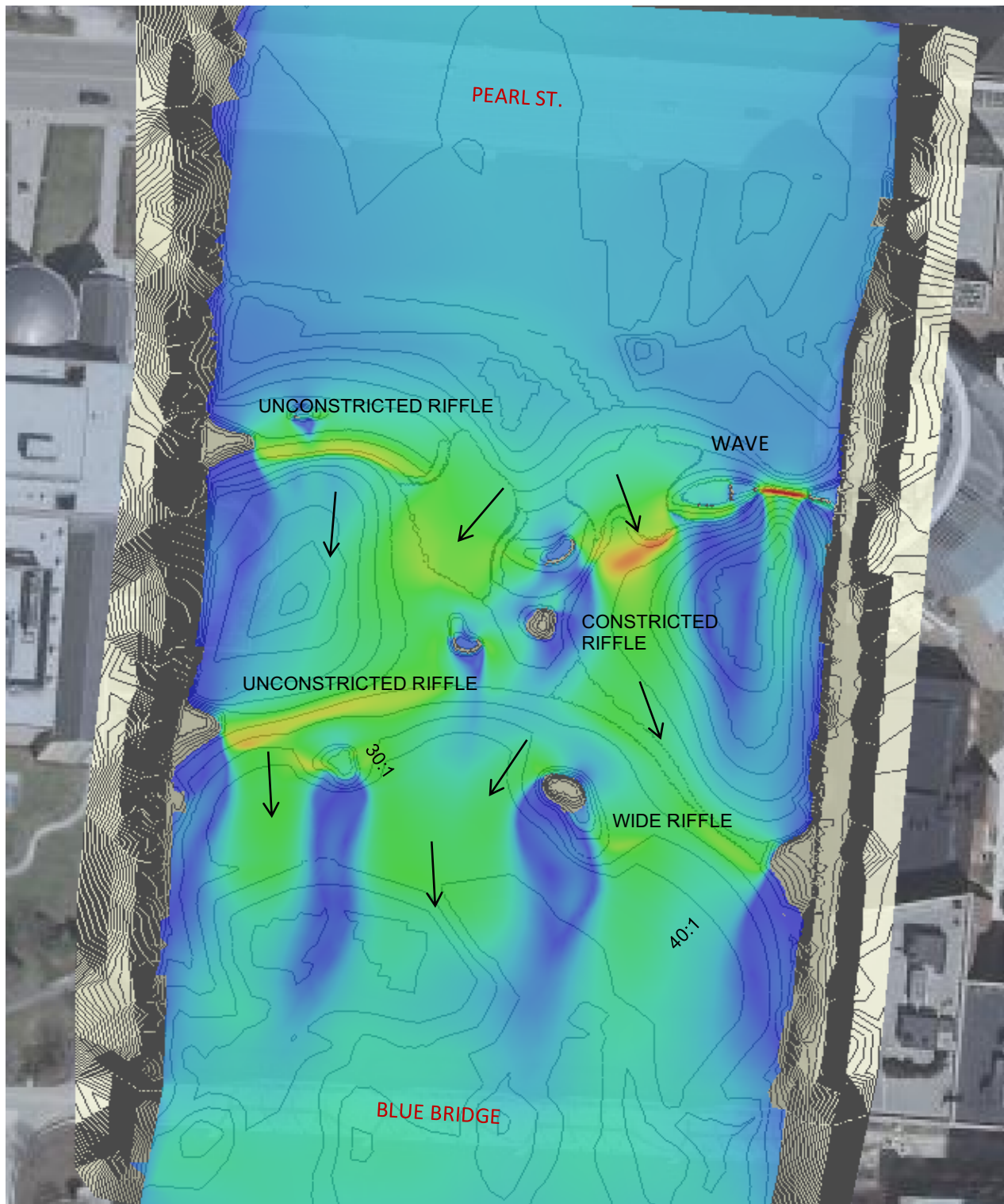
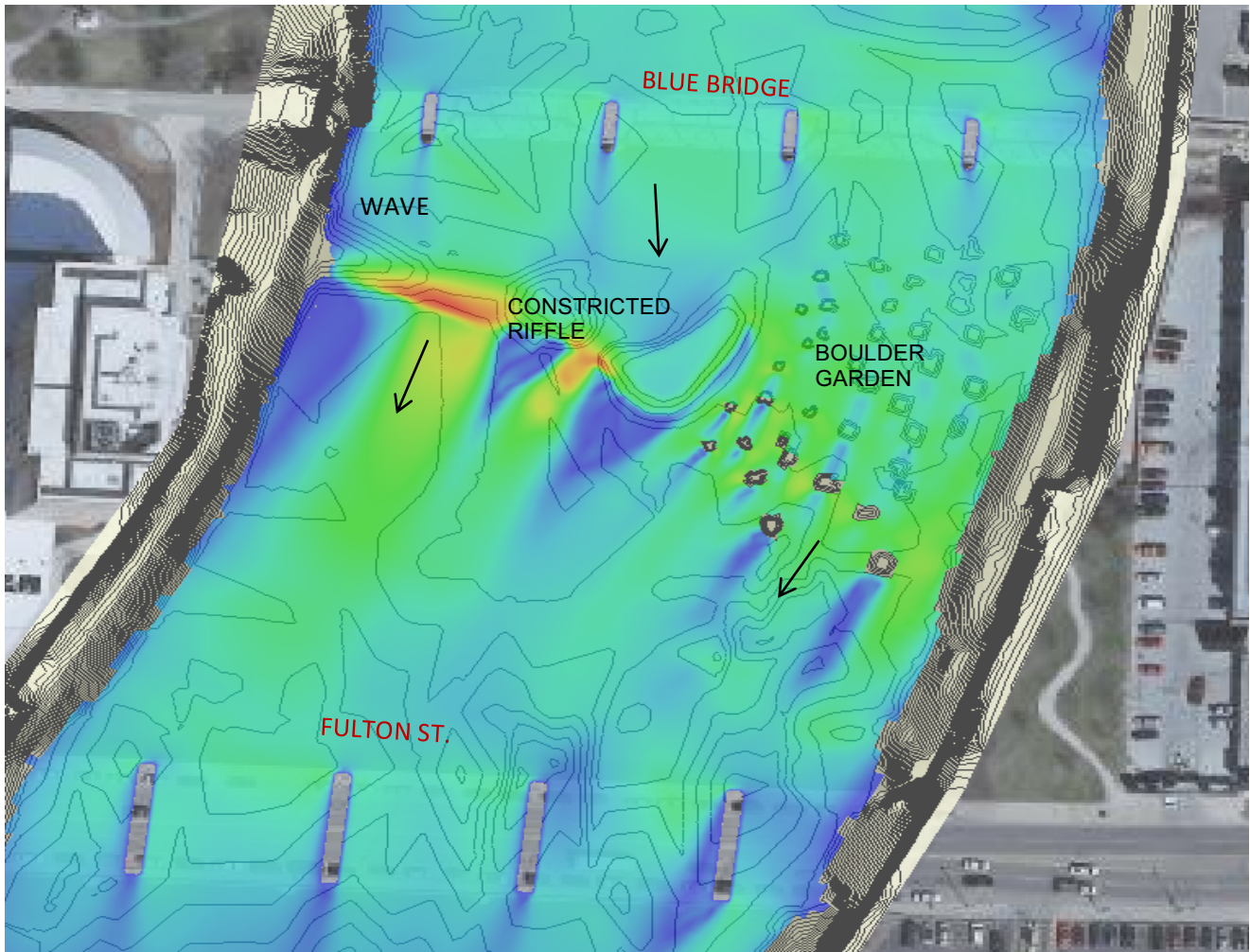


Figure 1.5: Blue Bridge to Fulton Street Design



## Other Project Figures

Figure 2.0: Approximate AHS Construction Footprint and AHS Location





**Figure 3.0: Instream Work Area from  
AHS to RCPP Project Boundary**

